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Shyh-Kwei Chen

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MCGINN INTELLECTUAL PROPERTY LAW GROUP, PLLC
8321 OLD COURTHOUSE ROAD
SUITE 200
VIENNA, VA 22182-3817

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SHYH-KWEI CHEN, KUN-LUNG WU, and
PHILIP SHI-LUNG YU

Appeal 2010-000678
Application 10/671,938
Technology Center 2100

Before RICHARD M. LEBOVITZ, JEFFREY B. ROBERTSON, and
DANIEL S. SONG, *Administrative Patent Judges*.

ROBERTSON, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF CASE

Appellants appeal under 35 U.S.C. § 134 from a rejection of claims 1-20. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM-IN-PART and ENTER NEW GROUNDS OF REJECTION under 37 C.F.R. § 41.50(b).

THE INVENTION

The claims are directed to a system and method for monitoring events against continual range queries for various application areas, such as for monitoring corporate management, road traffic conditions, and disease outbreaks. (Spec. 1, ll. 15-16.)

Claims 1, 9, and 20, reproduced below, are illustrative of the claimed subject matter:

1. A method for monitoring continual range queries against events, said method comprising:

decomposing each range query into one or more predefined virtual constructs;
building a query index; and
using said query index to match an event with said range queries.

9. A method of providing a service of monitoring events or conditions, said method comprising at least one of the following:

providing a service that monitors events against interests of a customer, said service monitoring said events by decomposing continual range queries related to said customer interests with one or predefined virtual constructs, building a query index, and using said query index to match an event with said range queries;
maintaining one or more customer interests expressed as continual range queries for the service that monitors events; and

notifying a subset of said customers whose interests match an event.

20. The method of claim 1, wherein said decomposing each range to determine said one or more predefined virtual constructs comprises generating a set of working rectangles in an event space that become progressively smaller in size.

(Appeal Brief, Claims Appendix¹ 28-29, 31.)

THE REJECTIONS

- I. The Examiner rejected claims 1-20 under 35 U.S.C. § 101 as directed to non-statutory subject matter.² (Final Rejection, dated November 27, 2006, “Final” 3.)
- II. The Examiner rejected claims 16-19 under 35 U.S.C. § 101 as inoperative and therefore lacking utility. (Examiner’s Answer, dated August 6, 2007, “Ans.” 4.)
- III. The Examiner rejected claim 20 under 35 U.S.C. § 112, second paragraph, as indefinite. (Ans. 3.)
- IV. The Examiner rejected claim 9 under 35 U.S.C. § 102(b) as anticipated by Liu et al. (“Continual Queries for Internet Scale Event-Driven Information Delivery,” published in 1999). (Ans. 4-5.)
- V. The Examiner rejected claims 1-4, 6, 7, and 10-15 under 35 U.S.C. § 103(a) as unpatentable over Liu in view of Burrows et al. (US 5,915,251, issued June 22, 1999). (Ans. 5-8.)

¹ Appeal Brief filed April 27, 2007, hereinafter “App. Br.” and Claims App’x, respectively.

² The Examiner stated that the rejection was withdrawn in the Answer (Ans. 4), yet responded to Appellants’ arguments (Ans. 8-9), making the rejection’s status unclear. Appellants presumed for purposes of reply, that the rejection was not withdrawn. (Reply Br. 2.) We therefore treat the rejection as if it has not been withdrawn.

ISSUES

Rejection One

The Examiner concluded that the claims are not directed to statutory subject matter, because the claims failed the “useful, concrete, and tangible” result test articulated in *State St. & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1373 (Fed. Cir. 1998). (Final 3.)

With respect to claims 1-9 and 16-20, Appellants argue that the invention is clearly described in the Specification as being executed on a computer (e.g., a machine) and directed to the practical utility of activity/event monitoring, and that no algorithm is being preempted by the present invention. (App. Br. 10.) Appellants also argue that because the present invention is directed to activity/event monitoring, it is inherently a real-world application (citing Spec. 1, ll. 15 *et seq.*), and therefore the claims provide a tangible result. (App. Br. 11.)

Appellants further contend that claim 15 is directed toward a computer medium and therefore is directed to statutory subject matter in light of *In re Beauregard*, 53 F.3d 1583 (Fed. Cir. 1995). (App. Br. 10.)

Rejection Two

The Examiner concluded that claims 16-19 are inoperable and lack utility because the claimed “predefined virtual construct” comprising “rectangular objects” cannot exist in a one-dimensional event space. (Ans. 4.)

Appellants point to page 7, lines 14-17 of the Specification, and argue that the word “rectangle” is intended to mean a geometrical construct in dimensions other than merely two-dimensional event spaces. (App. Br. 12.)

Therefore, Appellants argue that a “rectangle” of a one-dimensional event space would be line segments, in the context of the present invention. (App. Br. 12.) Appellants also note that claims 18 and 19 do not make any reference to “rectangle” and, thus were not properly rejected under the Examiner’s rationale. (App. Br. 12.)

Rejection Three

Regarding claim 20, the Examiner found that it is unclear whether the set of working rectangles or the event space becomes progressively smaller in size. (Ans. 3.) The Examiner also found that the phrase “progressively smaller in size” is unclear because the reduction in size could be based on either perimeter or total area. (Ans. 3, 10.)

Appellants argue that the only noun in the clause preceding the plural verb “become” that is plural is “rectangles,” thereby clearly establishing that the description relates to “rectangles” that become progressively smaller in size. (App. Br. 13.) Appellants also argue that “progressively smaller in size” covers both manners of becoming progressively smaller, perimeter or total area. (App. Br. 13; Reply Br. 4-5.)

Rejection Four

The Examiner found that Liu discloses “maintaining one or more customer interests expressed as continual range queries for the service that monitors events,” as recited in claim 9. (Ans. 4-5.) The Examiner found that because “providing a service that monitors events against interests of a customer . . .” and “notifying a subset of customers whose interests match an

event” were optionally recited within the claim, those limitations did not carry any patentable weight. (Ans. 5.)

Appellants argue that the Examiner can only ignore optional claim limitations of a plurality of claim limitations if they are “separably optional.” (App. Br. 14.) Appellants argue that because the second limitation of claim 9 uses the claim terminology “the service that monitors events,” which refers back to the first claim limitation, that the first limitation must also be met by the prior art. (App. Br. 14.)

Rejection Five

The Examiner found that Liu fails to disclose a method comprising “building a query index,” as recited in claim 1. (Ans. 5.) The Examiner found that Burrows discloses building a query index because Burrows teaches indexing range-based values. (Ans. 6.) The Examiner determined that it would have been obvious to one of ordinary skill in the art to modify Liu by combining it with the invention disclosed by Burrows, and that one of ordinary skill in the art would have been “motivated to do this modification so that a query index may be used to match an event with the continual range queries specified by a user.” (Ans. 6.)

Appellants argue that the Examiner has not provided a sufficient rationale to support a conclusion of obviousness. (App. Br. 16-17.) Appellants contend the rationale provided by the Examiner amounts to circular reasoning. (App. Br. 22.)

Therefore, the dispositive issues on appeal are:

- (I) Whether the Examiner erred in determining that all of Appellants’ claims are not directed to statutory subject matter?

- (II) Whether the Examiner erred in determining that claim 20 was indefinite due to its recitation that objects becomes progressively smaller in size?
- (III) Whether the Examiner erred in finding that only one of the separate limitations of claim 9 was required to be disclosed in the prior art for claim 9 to be anticipated?
- (IV) Whether the Examiner erred in determining that it would have been obvious to one of ordinary skill in the art to combine the teachings of Liu and Burrows to arrive at Appellants' invention recited in claims 1-4, 6, 7, and 10-15?

PRINCIPLES OF LAW

35 U.S.C. § 101

Title 35, Section 101 of the United States Code defines the subject matter that may be patented under the Patent Act:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

“Section 101 thus specifies four independent categories of inventions or discoveries that are eligible for protection: processes, machines, manufactures, and compositions of matter.” *Bilski v. Kappos*, 130 S. Ct. 3218, 3225 (2010). “In choosing such expansive terms . . . modified by the comprehensive ‘any,’ Congress plainly contemplated that the patent laws would be given wide scope.” *Bilski*, 130 S. Ct. at 3225 (citing *Diamond v. Chakrabarty*, 447 U.S. 303, 308 (1980)).

Judicial case law has created only three categories of subject matter outside the eligibility bounds of § 101—laws of nature, physical phenomena, and abstract ideas. *See Bilski*, 130 S. Ct. at 3225.

With respect to the judicially created “abstract idea” exception, the United States Court of Appeals for the Federal Circuit recently stated that it “does ‘not presume to define ‘abstract’ beyond the recognition that this disqualifying characteristic should exhibit itself so manifestly as to override the broad statutory categories of eligible subject matter and the statutory context that directs primary attention on the patentability criteria of the rest of the Patent Act.’” *Ultramercial, LLC v. Hulu, LLC*, 657 F.3d 1323, 1327 (Fed. Cir. 2011) (citing *Research Corp. Tech., Inc. v. Microsoft Corp.*, 627 F.3d 859, 868 (Fed. Cir. 2010)).

35 U.S.C. § 112, second paragraph

The test for definiteness under 35 U.S.C. § 112, second paragraph, is whether “those skilled in the art would understand what is claimed when the claim is read in light of the specification.” *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1576 (Fed. Cir. 1986) (citations omitted).

35 U.S.C. § 102

“Anticipation requires that every limitation of the claim in issue be disclosed, either expressly or under principles of inherency, in a single prior art reference.” *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1255-56 (Fed. Cir. 1989).

35 U.S.C. § 103

The examiner bears the initial burden of factually supporting any prima facie case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). The key to supporting any prima facie case of obviousness under 35 U.S.C. § 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious. The Supreme Court in *KSR Int’l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007) noted that the analysis supporting a rejection under 35 U.S.C. § 103 should be made explicit. “[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

FACTUAL FINDINGS (FF)

1. Appellants’ Specification discloses storing instructions on “machine-readable data storage media, such as . . . suitable signal-bearing media including transmission media such as digital and analog communication links and wireless.” (Spec. 18, l. 22 – 19, l. 5.)
2. Liu discloses a continual query for use in the OpenCQ continual query system, containing a trigger condition *Tcq*, an example of which may be “Stock.price (IBM) IncreaseBy% 5 OR Stock.price (Intel) DecreaseBy% 5”. (Section 2.1, Page 5; Section 3.1, Page 7; Section 4.3, Page 13; Section 4.42, Page 16.)
3. Liu discloses that the initial execution of a continual query is performed as soon as it is installed and that subsequent executions

of a query are performed whenever a new update event occurs (is signaled) and the trigger condition *Tcq* becomes true. (Section 2.1, Page 4.)

4. Burrows discloses indexing range based values. (Col. 2, ll. 16-23.)
5. Burrows discloses that attributes, such as size and date, can be searched using range-based values. (Col. 8, ll. 53-55.)

ANALYSIS

Issue One

At the outset, we note that our reviewing Court has abrogated the useful, concrete, and tangible result inquiry relied on by both the Examiner and Appellants. *See In re Bilski*, 545 F.3d 943, 959-60 (Fed. Cir. 2008) (“[W]e also conclude that the “useful, concrete and tangible result” inquiry is inadequate.”).

In view of the Supreme Court’s guidance in *Bilski v. Kappos*, 130 S. Ct. 3218 (2010), and subsequent interpretation by the Federal Circuit, we conclude that claim 1 is directed to an abstract idea. Specifically, claim 1 does not recite the use of a computer. In addition, the “decomposing,” “building,” and “using said query index to match an event” steps recited in claim 1, in the simplest instance, could be performed in the human mind, or by a human using a pen and paper. *See CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1372 (Fed. Cir. 2011) (holding method for verifying the validity of a credit card transaction over the Internet to be non-statutory as an abstract idea capable of being performed in the human mind or by a human using a pen and paper).

Further, claim 1 of the present invention is not directed to any particular algorithm – in this case, for decomposing, building a query index, or matching. *Id.* Rather, the broad scope of claim 1 extends to essentially any method of performing the claimed steps. *Id.* For example, claim 1 is broad enough to be met by a customer service representative that is tasked with watching stock prices and mentally correlating the fluctuations of those stock prices to the requests of certain clients. Thus, each of the steps in claim 1, i.e., decomposing a range query, building a query index, and matching an event against the index, can all be carried out in the human mind without the use of a special purpose computer.

Furthermore, claim 1 would allow Appellants to preempt the use of this approach in all fields, and would effectively grant a monopoly over an abstract idea. *See Bilski*, 130 S. Ct. at 3231 (“Allowing petitioners to patent risk hedging would pre-empt use of this approach in all fields, and would effectively grant a monopoly over an abstract idea.”); *cf. Research Corp.*, 627 F.3d at 869 (noting that inventions with specific applications or improvements to technologies in the marketplace are not likely to be so abstract that they override the statutory language and framework of the Patent Act). Therefore, we conclude that claim 1 is directed to non-statutory subject matter.

With respect to claim 10, the invention underlying claim 10 is the same invention of claim 1, albeit being directed to a “system,” i.e., a method for monitoring continual range queries against events. *See CyberSource*, 654 F.3d at 1374 (“Regardless of what statutory category . . . a claim’s language is crafted to literally invoke, we look to the underlying invention for patent-eligibility purposes.”). Thus, we conclude that claim 10 is

directed to non-statutory subject matter. For similar reasons, we conclude that claims 2-9 and 16-20 are directed to non-statutory subject matter.

Claims 11-14 stand on different footing. Claims 11-14 each recite a “sensor,” “client input station,” “client receiver,” and “query monitor,” which are physical structures. (*See e.g.*, Spec. 7, ll. 3-13.) Thus, claims 11-14 recite the use of a machine, one of the four statutory categories of subject matter. *See Bilski*, 130 S. Ct. at 3228. Therefore, we conclude that claims 11-14 are patent eligible under 35 U.S.C. § 101.

Claim 15 is directed to a signal-bearing medium. As stated in the Specification, Appellants’ signal bearing media includes digital and analog communication links and wireless signals. (FF 1.) These types of signal bearing media encompass transitory signals. Accordingly, claim 15 is not constrained to a tangible, non-transitory medium and could encompass non-statutory subject matter, such as transitory, propagating signals. *See In re Nuijten*, 500 F.3d 1346, 1353-54 (Fed. Cir. 2007) (holding that transitory, propagating signals are not patentable subject matter under § 101). Thus, we agree with the Examiner that Appellants’ claim 15 recites non-statutory subject matter.

With respect to the Examiner’s separate rejection of claims 16-19 under 35 U.S.C. § 101 for lacking utility, we need not reach this rejection because the claims are non-statutory for at least the reasons identified above.

Because our rationale for rejecting claims differs from that of the Examiner, we enter a new ground of rejection of claims 1-10 and 15-20 under 35 U.S.C. § 101 as being directed to non-statutory subject matter, for the reasons stated above, pursuant to our authority under 37 C.F.R. § 41.50(b).

Issue Two

We do not agree with the Examiner that claim 20 is indefinite. Rather, we agree with Appellants that one of ordinary skill in the art would have understood in reading the claim that it is the “rectangles” that become progressively smaller in size. (App. Br. 13.)

With respect to the Examiner’s argument that two possible interpretations of “progressively smaller in size” also make the claim indefinite, we again agree with Appellants that the breadth of their claim does not render the same indefinite. While “progressively smaller in size” defines broadly the relationship between successive rectangles generated in claim 20, broad terms are not necessarily indefinite. *See In re Gardner*, 427 F.2d 786, 788 (CCPA 1970). If the claims read in light of the specification reasonably apprise those skilled in the art of the scope of the invention, Section 112 demands no more. *Miles Labs., Inc. v. Shandon, Inc.*, 997 F.2d 870, 875 (Fed. Cir. 1993) (citing *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1385 (Fed. Cir. 1986)). Here, the examples and figures set forth in Appellants’ Specification provide the person of ordinary skill in the art adequate guidance as to the meaning of “progressively smaller in size.” Thus, we agree with Appellants that claim 20, when read in light of the Specification, would not have been indefinite to one of ordinary skill in the art.

Issue Three

We are not persuaded by Appellants’ argument that the limitations of claim 9 are not “separably optional.” Appellants appear to suggest that

because the second limitation of claim 9 recites “the service that monitors events,” that this incorporates the first limitation of claim 9, which references “a service that monitors events.” However, the preamble of claim 9 recites “a service of monitoring events.” Additionally, as the Examiner has pointed out, when Appellants refer to the service in the first limitation they recite “said service,” but do not recite “said service” in the second limitation.

The claim preamble explicitly states that the method comprises “at least one of” three recited steps, indicating that only one step of the recited steps is necessary to meet all limitations of the claimed method. Thus, the plain language of the claims does not support Appellants’ position. Therefore, we agree with the Examiner that claim 9 is anticipated if any one of the three limitations is present in the prior art. Because Liu discloses a continual range query for use in the OpenCQ continual query system (FF 2), which satisfies the second recited step of claim 9, we agree with the Examiner that claim 9 is anticipated.

Issue Four

We agree with Appellants that the Examiner has not provided a sufficient rationale to support his obviousness determination with respect to claims 1-4, 6, 7, and 10-15. The Examiner’s determination of obviousness is based on the rationale that one of ordinary skill in the art would have been “motivated to [modify the prior art] so that a query index may be used to match an event with the continual range queries specified by a user.” (Ans. 6.) However, neither Liu nor Burrows discloses that a query index may be used to match an event with continual range queries in that neither of these

references perform the recited step of “building a query index.” Liu only discloses that executions of a continual query are performed at install and whenever a new update event occurs and the trigger condition *Tcq* becomes true (FF 3), but does not, as the Examiner found (Ans. 5), disclose building a query index. Burrows discloses indexing range based values and searching range based values by range based queries, but does not disclose indexing these range based queries in order to match the range based queries to events. (FF 4-5.)

Further, the Examiner does not provide any further explanation or point to persuasive evidence in the record to provide an adequate rational underpinning to support the articulated reasoning. “[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *KSR*, 550 U.S. at 418 (quoting *In re Kahn*, 441 F.3d at 988).

CONCLUSIONS

The Examiner erred in determining that all of Appellants’ claims are not directed to statutory subject matter.

The Examiner erred in determining that claim 20 was indefinite due to its recitation that objects become progressively smaller in size.

The Examiner did not err in finding that only one of the separate limitations of claim 9 was required to be disclosed in the prior art for claim 9 to be anticipated.

The Examiner erred in determining that it would have been obvious to one of ordinary skill in the art to combine the teachings of Liu and Burrows to arrive at Appellants' invention recited in claims 1-4, 6, 7, and 10-15.

DECISION

We affirm the Examiner's rejection of claims 1-10, and 15-20 under 35 U.S.C. § 101 as directed to non-statutory subject matter and enter a new ground of rejection as discussed above.

We reverse the Examiner's rejection of claims 11-14 under 35 U.S.C. § 101 as directed to non-statutory subject matter.

We reverse the Examiner's rejection of claim 20 under 35 U.S.C. § 112, second paragraph, as indefinite.

We affirm the Examiner's rejection of claim 9 under 35 U.S.C. § 102(b) as anticipated by Liu.

We reverse the Examiner's rejection of claims 1-4, 6, 7, and 10-15 under 35 U.S.C. § 103(a) as unpatentable over Liu in view of Burrows.

This decision contains new grounds of rejection pursuant to 37 C.F.R. § 41.50(b). 37 C.F.R. § 41.50(b) also provides that the Appellants, *WITHIN TWO MONTHS FROM THE DATE OF THE DECISION*, must exercise one of the following two options with respect to the new grounds of rejection to avoid termination of the appeal as to the rejected claims:

(1) *Reopen prosecution.* Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the Examiner, in which event the proceeding will be remanded to the Examiner

(2) *Request rehearing.* Request that the proceeding be reheard under § 41.52 by the Board upon the same record

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1).

AFFIRMED-IN-PART;

NEW GROUNDS OF REJECTION (37 C.F.R. § 41.50(b))

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